

# Widescreen Test Pattern (16:9)

## Aspect Ratio Test

(Should appear  
circular)

4x3


16x9

# BUILDING AN EMPIRE

ASSET PRODUCTION IN  
RYSE: SON OF ROME







# CHARACTER TECHNOLOGY

CHUCK

# MARIUS ON XBOX ONE

- ❑ ~85k Triangles
- ❑ > 815 Joints
  - ❑ ~585 deforming (260 facial)
- ❑ 250 Corrective Facial Blendshapes
  - ❑ Culled by priority and distance

BLEND IN / OUT





# MARIUS ON XBOX ONE

- ❑ Physicalized Joints [~70]
  - ❑ Hinge, cone, prismatic, plane
    - Cloth, Leather, Armor, Muscle, Fat
- ❑ Cloth
  - ❑ Sim mesh drives render mesh
    - Runtime 'wrap' deformer
  - ❑ Targets animation [evade]
  - ❑ [Examples] [Editor]

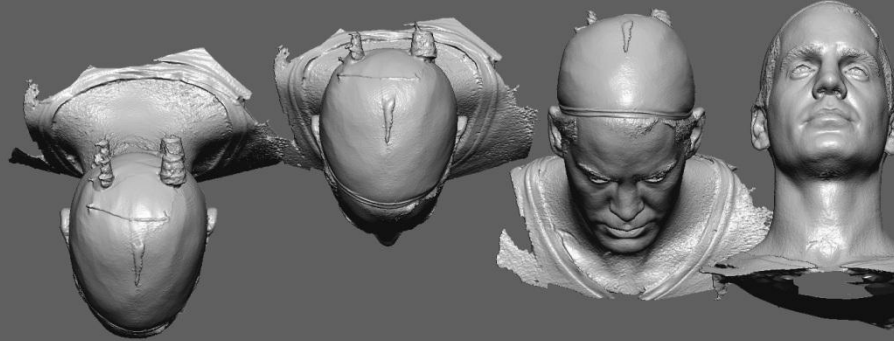
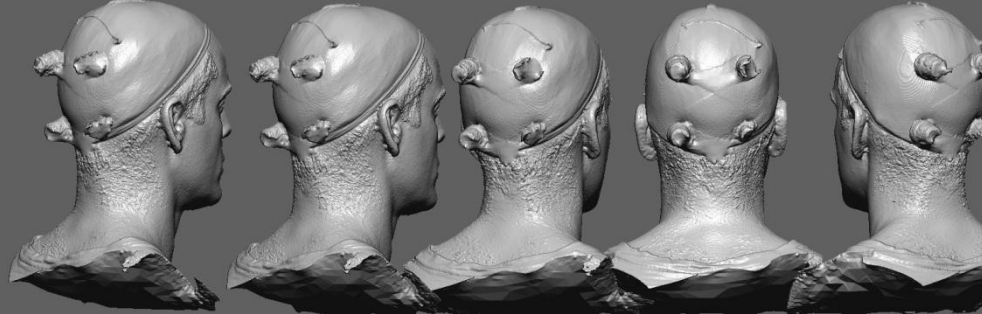
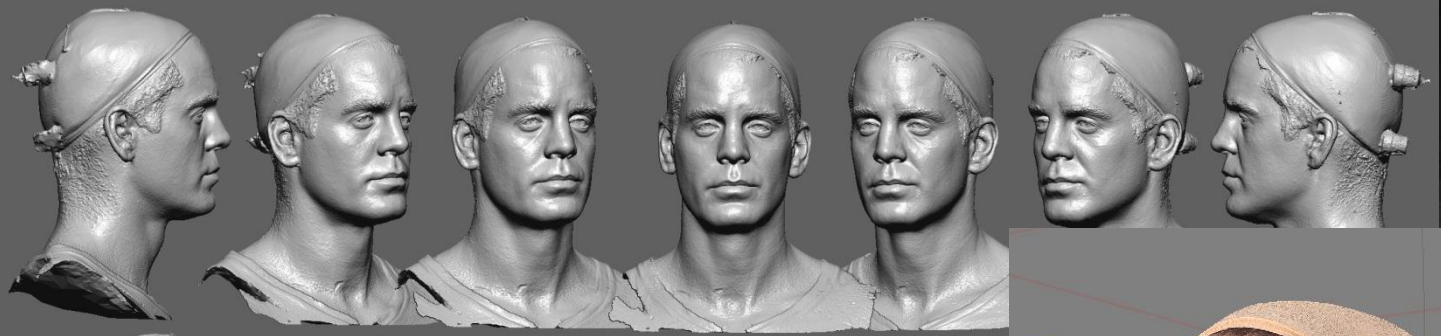


# FACES

- FACS-based rigs
  - Scan reliant
    - art can deviate ~20%











# FACIAL TECH

- ❑ 8 Skinning Influences
- ❑ Tangent update

UNLIT WIP



# FACIAL TECH

- ❑ 8 Skinning Influences
- ❑ Tangent update
- ❑ Granular LOD Tech
  - ❑ Cull meshes
  - ❑ Unique distances
  - ❑ Change skinning/shaders

UNLIT WIP





# FACES: TO RIG OR NOT TO RIG?

## ❑ Why not use 4D scanning?

- ❑ Seated capture
- ❑ Not editable
- ❑ Inconsistent
- ❑ Doesn't support LOD / doesn't scale
- ❑ No dynamic playback
- ❑ Lips and eyes
- ❑ Low resolution
- ❑ Memory intensive

## ❑ Drive 4D Data with Puppets

- ❑ *[HABLE14]* - Next-Gen Characters: From Facial Scans to Facial Animation
- ❑ Researched but not used on in final Ryse pipeline



# FACES

- ❑ FACS-based rigs

  - ❑ Scan reliant

    - art can deviate ~20%

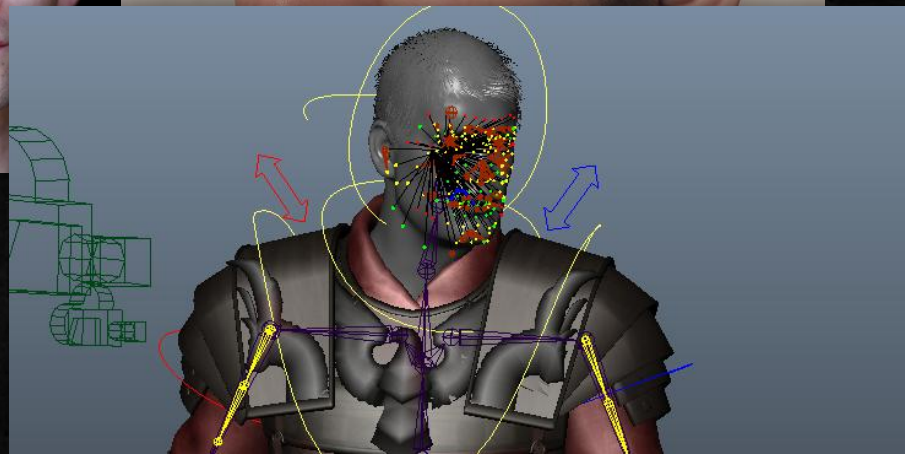
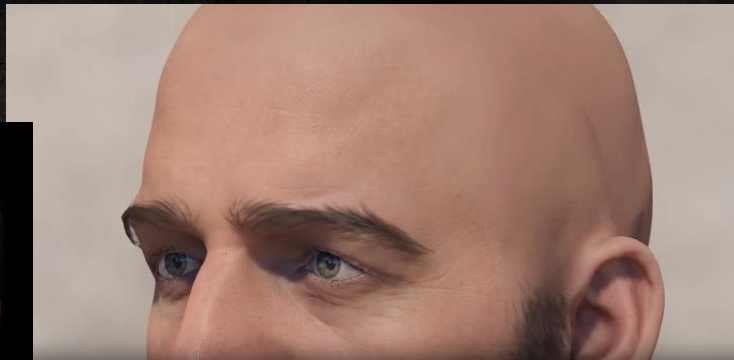
- ❑ 260 Joints

- ❑ ~250 driven blendshapes

  - ❑ Keeps rig 'on model'

  - ❑ ~85 firing at any given time

  - ❑ Up to 200,000 vtx deltas/frame computed





**WAIT**

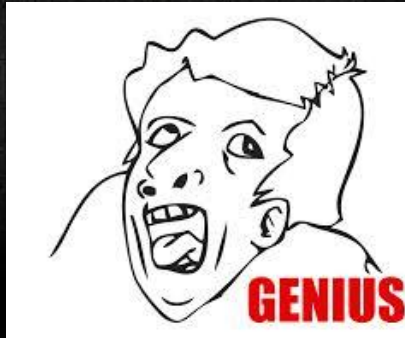
**260 JNTS AND 250 SHAPES**

**CRYTEK, EXPLAIN THIS SHIT**

**WHAT**

# 'RIG' LEVEL OF DETAIL (LOD)

- Think 'Multi-resolution'
  - Facial 'rig' per hardware spec, not just distance
  - Shared hierarchy differentiates 'rig' resolution
- One rig to rule them all?
  - Used nested hierarchies in layers
  - All animations shared across characters
  - Rig logic must drive all resolutions at once.
    - One anim set stores all resolutions





# LEVEL OF DETAIL

Assets

CPU s

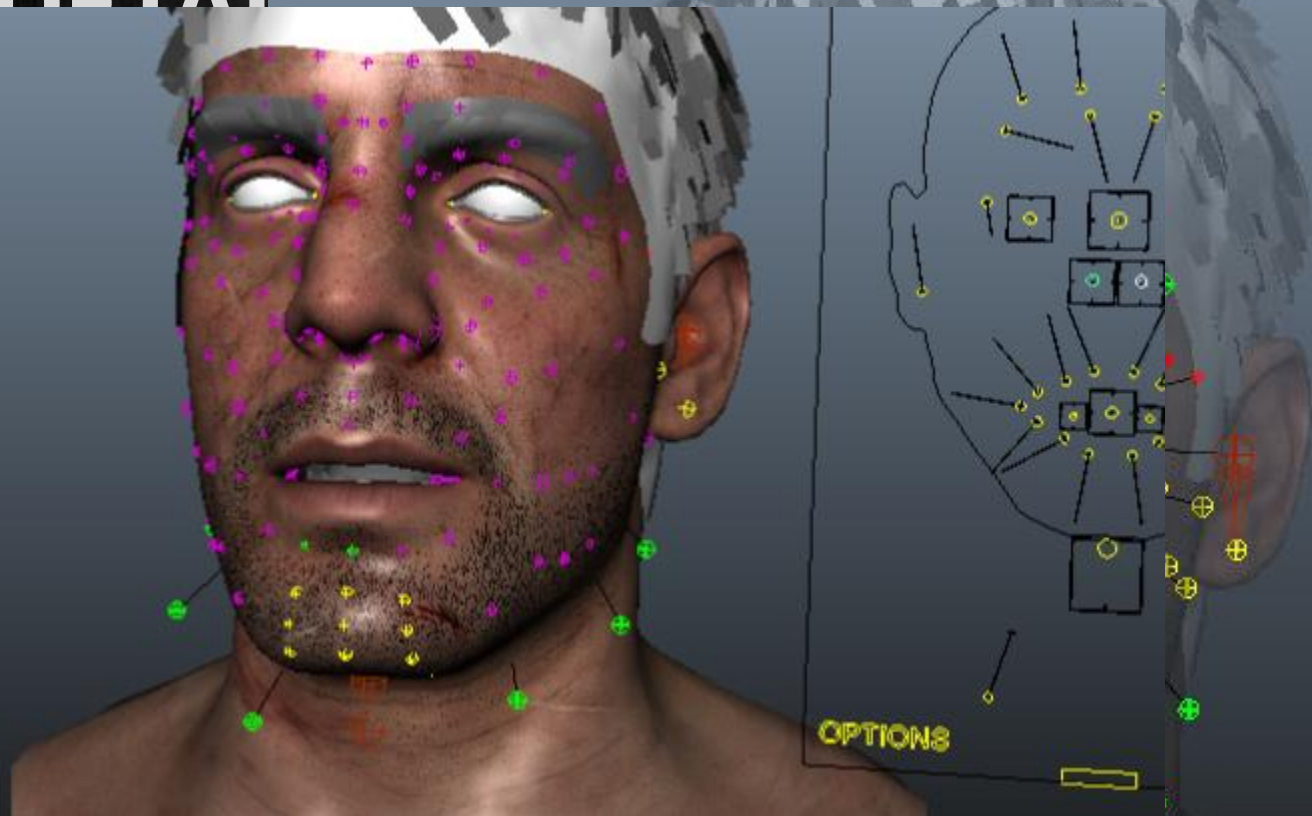
tris ac

CPU s

face p

GPU s

GPU s



Distance	Face parts
4m	Eyebrow meshes replaced, baked into facial texture
3m	Eyelash geometry culled
3m	Eye AO 'overlay' layer culled
4m	Eye balls removed, replaced with baked in eyes in head mesh
2m	Eye 'water' miniscus culled
3m	Eye tearduct culled
3m	Teeth swapped for built-in mesh
3m	Tongue swapped for built-in mesh



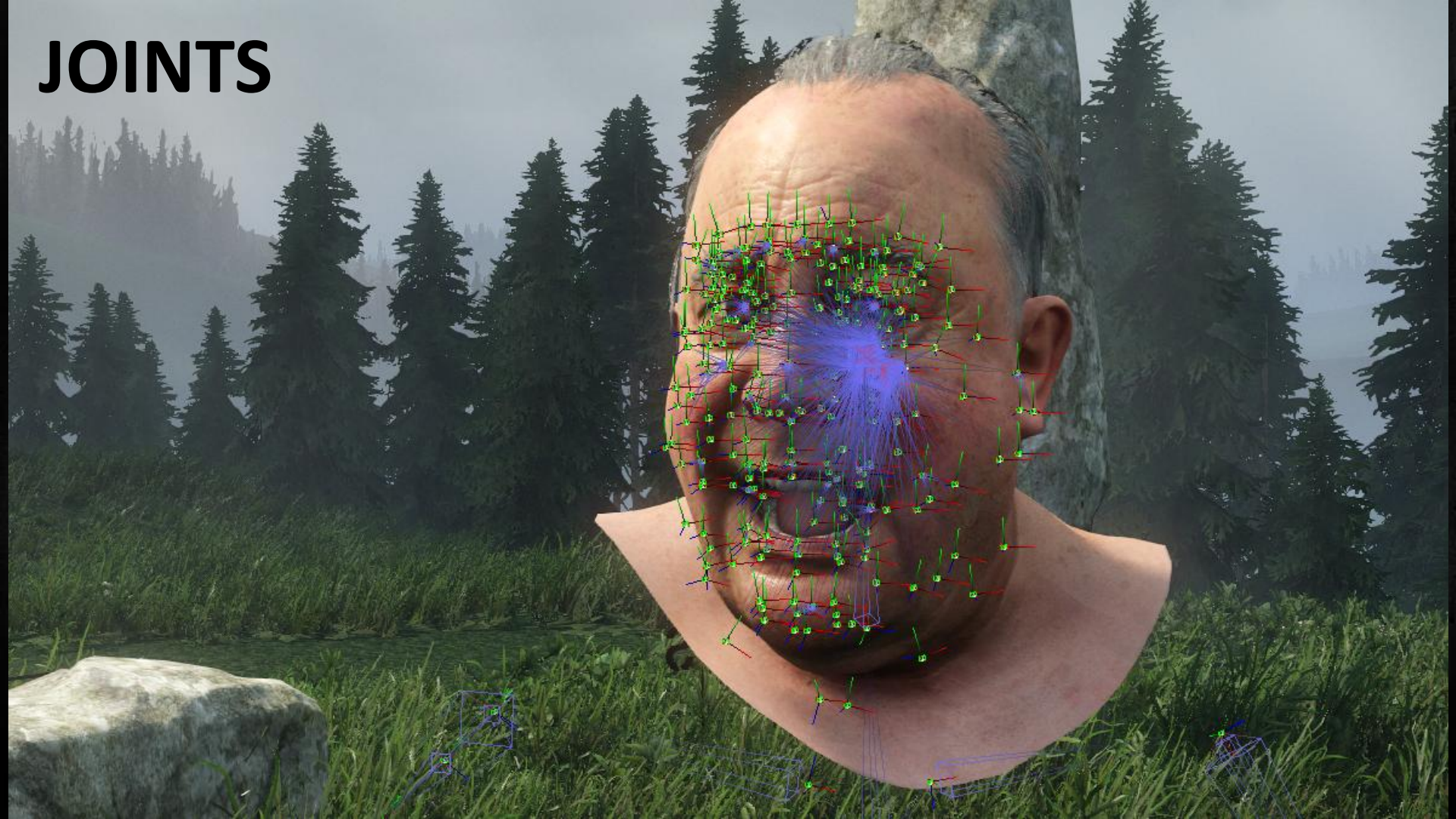
# JOINTS



\*UNLIT TEST ASSET



# JOINTS





# JOINTS



# CORRECTIVES





# CORRECTIVES [VIDEO]

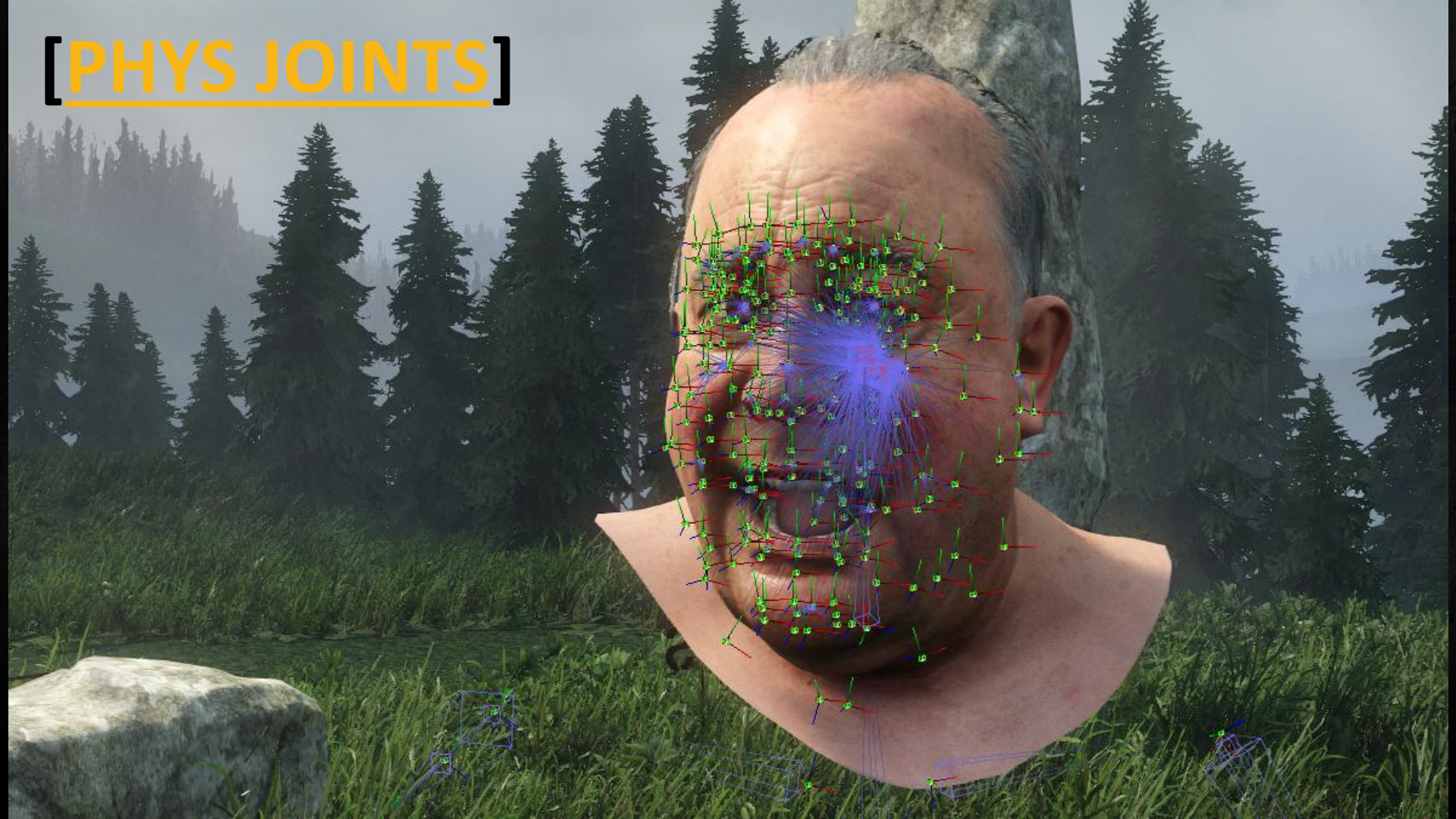


# TANGENT UPDATE





# [PHYS JOINTS]





# FACIAL PERFORMANCES





**EMOTIONAL INTENSITY [ORAC]**





# ORAC BTS

# DON'T FORGET THE GAME



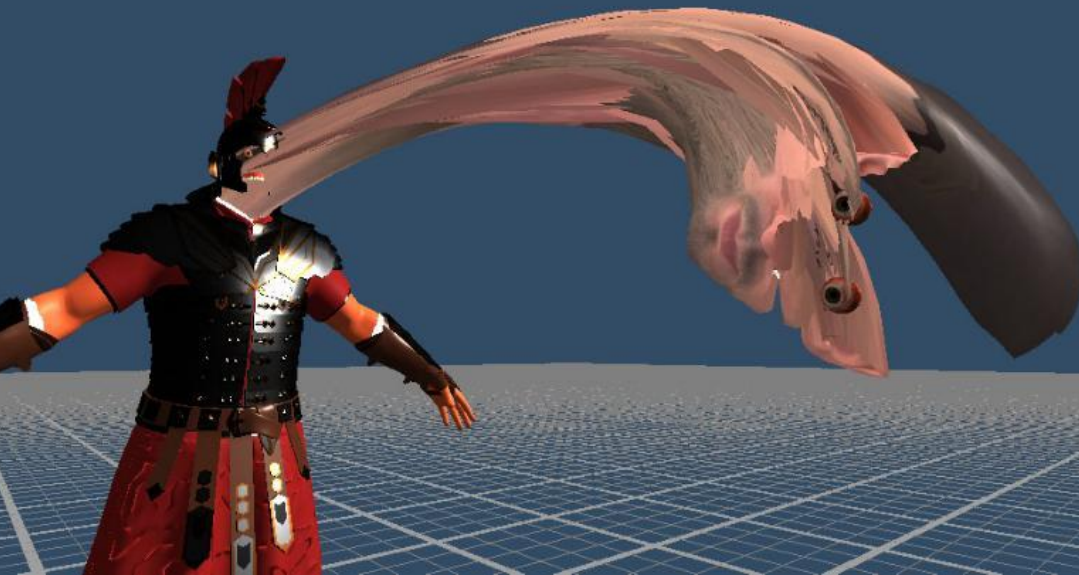
**[MS COMBAT VIDEO]**



# THANK YOU.

characters/human/medium/story/marius/mrus\_player.cdf

Tris: 0





**THANK YOU.**



# SPECIAL THANKS!



## TECHNICAL ART

Riham Toulan

Sascha Herfort

Harald Zlattinger

Alex Raab

Franco Bresciani

## PROGRAMMING

Nicolas Schulz

Axel Gneiting

Bogdan Coroi

Ivo Herzeg

Andy Rayson

## CHARACTER ART

Frederic Lierman

Lars Martinsson

Hanno Hagedorn

Florian Reschenhofer

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Hyejin Moon

Chris Goodswin